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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,337	09/25/2003	Vincent H. Crespi	8734.234.00-US	6608

7590 04/09/2007  
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EXAMINER
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HENDRICKSON, STUART L

ART UNIT	PAPER NUMBER
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1754

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/669,337

**Applicant(s)**

CRESPI ET AL.

**Examiner**

Stuart Hendrickson

**Art Unit**

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18-22 and 24-26 is/are rejected.
- 7) ☒ Claim(s) 17, 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. The RCE filed is accepted.

Claims 1-11, 19-21, and 24-26 are rejected under 35 U.S.C. 102(a) and (e) as being anticipated by Schleier-Smith 6,669,918.

As to claim 1, Schleier-Smith discloses a method for bulk separating single-walled fullerenes based on chirality comprising the steps of: forming a template on a crystalline substrate having a plurality of openings, then exposing the template to a suspension of single-walled fullerenes of random chiralities for adsorption of fullerenes having the selected chirality, and removing the adsorbed fullerenes (see column 2, lines 1-16). As to the limitation of flowing the fullerenes on the substrate at an angle, this is inherently possessed by Schleier-Smith because whatever angle the fullerenes flow over the substrate is the angle.

As to claims 2 and 3, the fullerenes of Schleier-Smith '918 are in the form of a colloidal suspension (see column 5, lines 2-3; see also, column 4, lines 50-51) suggesting that the fullerenes are dissolved and/or suspended prior to being flowed over the substrate.

As to claims 4-6, the fullerenes of Schleier-Smith inherently would align longitudinally along the axes of the fullerenes with the direction of flow of the fluid because this is the alignment that would automatically occur as a result of fluid dynamics.

It appears that claims 7-11 are inherent in that they recite flow through a pipe. As to claims 19-21 and 24-26, Schleier-Smith inherently has all of the components of the claimed system because the process is the same, which would require a similar system as that claimed here.

The applied reference has two common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

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1-16                      18-22

Claims ~~4-11, 13-16~~ and ~~18-22~~ and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schleier-Smith '918.

The rejection above is incorporated herein. With regard to claims 4-6, insofar as these are not inherently possessed by Schleier-Smith, these are obvious expedients. It would have been obvious to align the longitudinal axes of the fullerenes with the direction of flow so as to obtain better fluid flow and so that the fullerenes do not get stuck inside the outlet passage. Insofar as these limitations are not inherently possessed by the reference, it would have been obvious to use any structure that would work. As to claim 8, selecting the size of the outlet passage is an obvious optimization. See, e.g., In re Boesch, 617 F.2d 272, 205 U.S.P.Q. 215 (CCPA 1980).

As to claims 12 and 13, Schleier-Smith discloses functionalizing the fullerenes with amines (see column 5, lines 12-14). However, amines do not have high electric or magnetic susceptibility. Nonetheless, it would have been obvious to functionalize the fullerenes with molecular groups having high electric or magnetic susceptibility in order to better align the tubes when applying an electric field (see column 4, lines 49-54).

As to claim 14, this merely appears to be a pipe, which is inherent in any system with controlled flow. In the alternative, it would be obvious to use any structure that would control flow. Claim 15 is an obvious expedient to optimize the flow of fullerenes to the outlet. It would have been obvious to have the outlet of the fullerene flow exiting at the substrate, as in claims 16 and 18, in order to prevent loss of the fullerenes.

As above for claim 8, claim 22 is an obvious optimization.

Regarding claim 24, as above, it would have been obvious to have the dispensing assembly above the substrate in order to prevent loss of fullerenes.

With respect to claim 25, it would have been obvious to arrange the system components in any arrangement that would allow for all of the steps of the process.

As to claim 26, it would have been obvious to have a turntable for displaceably supporting a substrate in order to be able to easily remove the substrate.

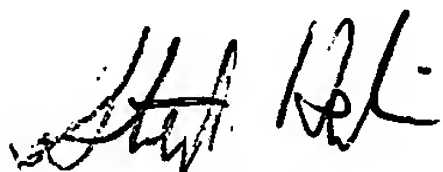
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Applicant's arguments filed 2/7/07 have been fully considered but they are not persuasive.

No specific angle has been claimed. A specification is not an invitation for one of ordinary skill to figure out what the invention is. From the reference, it appears that the liquid is introduced perpendicular to the filter 30 due to the 'sandwich' arrangement of fig. 4. The claims do not require separating the nanotubes by helicity, although this is implied. The claims also imply that one particular substrate will filter differing kinds of nanotubes, merely by changing the direction of the bulk liquid flow. If this is the case, it should be demonstrated. Rather, the system of the reference is more logical- the nature of how the filter is made dictates what is sorbed thereon. The system of the reference also is subject to fluid dynamic forces. No difference in how the systems work is seen. The tubes necessary to introduce the liquid to the filter are obvious, lest liquid spill all over.

Claims 17 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication should be directed to examiner Hendrickson at telephone number (571) 272-1351.



Stuart Hendrickson  
examiner Art Unit 1754